

## PATENT COOPERATION TREATY

## PCT



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 05 JUL 2005

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Applicant's or agent's file reference uod.3359.pct.dk/sb.d	<b>FOR FURTHER ACTION</b> See Form PCT/PEA/416	
International application No. PCT/GB2004/001545	International filing date (day/month/year) 08.04.2004	Priority date (day/month/year) 17.04.2003
International Patent Classification (IPC) or national classification and IPC G06T7/00		
Applicant THE UNIVERSITY OF DUNDEE et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau) a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand  09.11.2004	Date of completion of this report  04.07.2005	
Name and mailing address of the International preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Telephone No. +49 89 2399- 7631 Eckert, L. 	

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2004/001545

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-25 as originally filed

**Claims, Numbers**

1-30, 32-37 as originally filed

**Drawings, Sheets**

1/8-8/8 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	8,11-14,25,28-30,32
	No: Claims	1-7,9,10,15-24,26,27,33-37
Inventive step (IS)	Yes: Claims	8,11-14,25,28-30,32
	No: Claims	1-7,9,10,15-24,26,27,33-37
Industrial applicability (IA)	Yes: Claims	1-30,32-37
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**Re. item V:**

1. Reference is made to the following document:

**D1:** IOFFE S ET AL: "Human tracking with mixtures of trees" CONFERENCE PROCEEDINGS ARTICLE, vol. 1, 7 July 2001 (2001-07-07), pages 690-695, XP010554049

Clarity:

2. The application does not meet the requirements of Article 6 PCT, because claims 1, 7, 21, 23, 24, 30, 32, 33 and 35 - 37 are not clear.
  - 2.1. Re. independent claims 1 and 16: It is unintelligible what *applying* templates to an area of interest means. Although dependent claims 5 and 22 provide the necessary information, the questionable expression is not clear from claims 1 and 16 alone, respectively, as stipulated in Article 6 PCT.
  - 2.2. Re. independent claims 35 - 37: Since claim 35 is directed to a program on the one hand and since this program is embodied on a medium on the other hand, the category of this claim is not clear leaving the choice between a program and a computer program product as arguable alternatives. As a consequence, it is not clear either whether claim 35 should be counted as independent (computer program product) or dependent (program). The option of a program is already covered by claim 34 thus causing claim 35 to violate Article 6 PCT due to lack of conciseness. The option of a computer program product equally renders one of claims 35 and 36 superfluous, thereby inducing lack of conciseness as well. Contrary to the requirements of conciseness as set out in Article 6 PCT, dependent claim 37 is superfluous, since it contains all the features of independent claim 16 together with dependent claim 17.
  - 2.3. Re. dependent claims 7, 23 and 24: "The probabilistic region mask" of claims 7 and 24 has an antecedent only in preceding claims 6 and 23, respectively. However, claims 7 and 24 refer to "any preceding claim" and "Claims 16 to 22", respectively.

"The body" in claims 23 lacks an antecedent in claims 16 to 22.

2.4. Re. dependent claims 21, 30 and 33: Although claims 21 and 33 are directed to methods, they refer back to systems (claims 16 to 20 and claims 16 to 32, respectively). Likewise, claim 30 refers back to "any preceding claim" as a system although only preceding claims 16 - 29 are systems.

2.5. Re. dependent claims 32, 33 and 37: Claim 32 refers to non-existent claim 31. Likewise, claims 33 and 37 incorrectly imply the existence of an antecedent claim numbered 31.

Novelty:

3. The present application does not meet the requirements of Article 33(2) PCT, because the subject matter of claims 1 - 7, 9, 10, 15 - 24, 26, 27 and 33 - 37 is not new.

3.1. Re. independent claims 1, 16 and 34 - 36: Document **D1** discloses (references in parentheses referring to this document):  
"A method [...] comprising the steps of:  
creating a set of templates [...] (sections "2. Modeling with trees", "6.1. Detecting body parts")  
and applying said template to an area of interest [...] (sections "2. Modeling with trees", "6.1. Detecting body parts");  
analyse image pixels in the area of interest to determine the probability that it contains the object part (section "2. Modeling with trees");  
applying other templates [...] to determine the probability that said area of interest belongs to a corresponding object part (sections "2. Modeling with trees", "6.1. Detecting body parts")  
and arranging the templates in a configuration; calculating the likelihood that the configuration represents an object or structured parts of an object (sections "1. Introduction", "2. Modeling with trees");  
and calculating other configurations and comparing said configurations to determine the configuration that is most likely to represent an object or structured part of an

object (section "1. Introduction", "2. Modeling with trees")."

This is the exact (shortened) wording of independent method claim 1. The same reasoning applies mutatis mutandis to independent system claim 16, program claim 34, program (product) claim 35 and program product claim 36.

3.2. Re. dependent claims 2 - 6, 9, 10, 15, 17 - 24, 26, 27, 33 and 34: The following additional features are also disclosed in **D1** (references in parentheses referring to this document):

- claims 2, 20: probability from transform (section "6.1. Detecting body parts")
- claims 3, 19: dissimilarity (implicit in section "6.1. Detecting body parts")
- claims 4, 21: likelihood from dissimilarity (implicit in section "6.1. Detecting body parts")
- claims 5, 22: pose alignment (section "6.1. Detecting body parts")
- claims 6, 23: probabilistic region mask (section "6.1. Detecting body parts")
- claims 7, 24: region mask from training / segmentation (section "6.2. Modeling the body")
- claims 9, 26: product of likelihood ratios (section "3. Learning a tree model")
- claims 10, 27: determine spatial relationship (section "1. Introduction")
- claims 15, 33: human or animal body (sections "1. Introduction", "2. Modeling with trees")
- claims 17, 37: imaging means (section "6. Tracking")
- claim 18: stills or video camera (section "6. Tracking")

**Further remarks:**

4. According to Rule 6.2(b) PCT and the Guidelines, 5.11, claims should only contain reference signs in parentheses if the latter refer to the drawings. This provision is not met in view of the expression "(in 2D or 3D)" in claim 22.  
In the same context, the features of none of the claims are provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
5. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the document **D1** is neither identified in the description, nor is the relevant background art disclosed therein briefly discussed.



**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

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International application No.

**PCT/GB2004/001545**